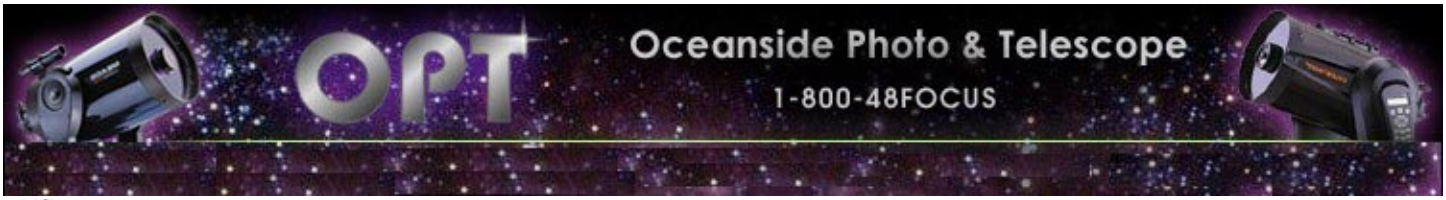


OPTimizing Your LXD55 SN Reflector & AR Refractor

The new Meade LXD55 SN and AR series of telescopes represents a quantum leap for both the new and experienced amateur astronomer. It's combination of premium optics and advanced computerized GoTo mount establishes a new standard in telescope value and performance.

Whether this is your first scope or a new addition, we at OPT hope this guide helps to familiarize you with the setup, operation and enjoyment of your new telescope. It is intended to be used with the Meade Instruction Manual. Take the time to read through both before unpacking your new scope.

If, at any time, we can be of any further assistance to you, please do not hesitate to contact us.

First Things First ...

Your new scope will come packaged in two cartons - one containing the OTA (Optical Tube Assembly) and related accessories and the other containing the LXD55 computerized mount and tripod.

Carefully open both cartons and take an inventory of parts checking that nothing is damaged or missing. Handle the OTA with care to avoid scratching or damaging the tube or the optics. Take a quick look at the lenses and mirrors checking for flaws or debris. If you find any discrepancies or problems, immediately contact Meade Customer Support at (800) 626-3233 or your dealer for his professional advise.

Tip: Never touch any optical surface - lens or mirror - with your hands or fingers. If there is a reason to handle the optics, use a pair of fresh white cotton gloves over a pair of disposable plastic gloves. This will prevent any oils from your skin being transferred to the optical surfaces. Never wipe the optical surfaces. There are professional cleaning solutions which will be discussed later. Telescope optics rarely need cleaning and should only be done using approved methods. Two useful tools for removing light dust or specs of matter are a "Wooster Shortcut White China Bristle Brush" - yellow handle with UPC #071497141194 - available at Lowe's Home Centers and a long handled Natural Camel Hair make up brush. Soak both in denatured alcohol (90% or higher) overnight before using to extract any oils which may be present - let them dry completely before using.

Before unpacking, take the time to read through the instruction manual and this guide - it will help to answer questions as you proceed with the assembly of your scope. Keep your instruction manual handy as this guide references page numbers, pictures, and parts numbered on Pages 4 & 5.

Assembling The Mount & Tripod ...

Following the instructions on Pages 11 & 12 of the manual, assemble the mount and tripod. At this time, do not mount the ring assembly, OTA or counterweights to the mount. That will come after the next step.

Tip: Have a set of metric and standard allen wrenches handy to "snug" up any loose allen head bolts. Do not overtighten - be careful not to strip the delicate threads.

Polar Scope Alignment: In order to have accurate GoTo functionality, the Polar Alignment Viewfinder (Polar Scope) must be aligned with the RA axis of the mount. The better the alignment, the more accurately you will be able to perform polar alignments. Take your time and be patient with this procedure. Refer to Fig 35 on Page 48 for a picture of the polar alignment viewfinder.

Take the scope outside and set it up where you have a clear view of a distant object. A good example is a flashing beacon on the top of a distant broadcast antenna. Any object a mile or so in distance will work - the further away the better.

Adjust the legs for a comfortable viewing height through the Polar Scope. Orient the mount so that the North leg

Assembling The Mount & Tripod ... *(con't)*

(the one with the star) is roughly pointing at your target object. Remove the **Polar Scope Cover** (#18), loosen the **DEC Lock** (#17) and turn the cradle base so it is pointing east-west in relation to the north leg. Lock the **Dec Lock**. Looking through the Polar Scope eyepiece, use the **Azimuth Adjustment Knobs** (#27) and the **Latitude Adjustment** handle (#26) to align the cross-hair on your target object.

Loosen the **RA Lock** (#33) and rotate the mount 90 degrees to your right so that the **Counterweight Bar** (#22) is now pointing to the left of the mount - horizontal to the ground. If the cross hair moved off of your target, you will need to take a small allen wrench and adjust the three small allen screws on the Polar Scope ring up against the setting circles. Make small adjustments to remove **HALF** of the error.

Now rotate the head 180 degrees to the left so that the Counterweight bar is now pointing to your right and horizontal to the ground. Again, adjust the screws to remove **HALF** of the error.

Keep repeating the procedure - moving the head back and forth and making fine adjustments - each time removing **HALF** the error - until the cross hairs stay centered on your target. Now your Polar Scope is aligned to your mount.

Tip: Replacing the tiny allen set screws with longer, larger headed screws of the same thread will make adjustments a lot easier. Available at most hardware stores. Alternate tightening and loosening screws. Do not overtighten.

Polar Home Position ...

Throughout the manual, you will be instructed to place the mount in **Polar Home** position (Fig. 16a & 16b on Page 17). This is the basic starting point for all setup and GoTo alignment procedures. Here is a quick and easy way to assure good alignments each and every time. Remove the OTA / Rings assembly and counterweights before proceeding.

Tip: NEVER remove the counterweights while the OTA is mounted. Always remove the OTA first when disassembling your scope.

Your scope may have come with two pairs of small black and white arrows stuck to your mount on the RA and DEC axis pivot seams. They may or may not be accurately placed - this procedure will insure that they are correct. You can do this inside in the comfort of your home.

Remove the LXD55 head from the tripod. Adjust the legs so that they are extended about halfway and the tripod is level. The easiest way is to place a small torpedo level across the head of the tripod. Adjust the legs until the bubble indicates level. Rotate the level about the head 90 degrees and check again. Adjust the legs as necessary. Keep doing this until the head is level in all directions. Lock the legs in place.

Tip: A small Torpedo Level is available from sears for under $5.00. It's the perfect size of 9" x 1-5/8". It has a magnetic strip on one edge and three bubble vials. Once you have the tripod level, you can glue a small round Bullet Level on the top of the East or West or both legs. Use GE Silicone Type II household cement - available at Home Depot and Lowe's. This will make set up a lot easier from now on.

Reattach the LXD55 head / motor assembly to the tripod - making sure it is tightened down snug. Do not attach the ring assembly or OTA at this time. The counterweight bar should be approximately centered over the North leg (the one with the star). Loosen both the **RA Lock** (#33) and **DEC Lock** (#17). Adjust the **Latitude Adjustment** handles (#26) until the Counterweight Shaft (#22) is extending between the outer two leg tubes of the North leg. Now use the **Azimuth Control Knobs** (#27) to center the shaft between the two outer tubes. Pace an alignment arrow on the South side of the mount below the Latitude Adjustment handle.

Tip: You can print out your own alignment arrows by downloading the file: Pointers.pdf available at the Yahoo Newsgroup: LXD55telescopes (http://groups.yahoo.com/group/LXD55telescopes/files/Pointers.PDF). This group always has a lively discussion covering all issues - both pro's and con's - along with many useful suggestions for getting the most enjoyment out of your new telescope. If you have a question, someone in the group will have an answer.

Holding the level against the **Counterweight Shaft** (#22), adjust the **Latitude Adjustment Handles** (#26) until the bar is vertical. Place the level in the Cradle Slot on the top of the mount. This is the slot where the **Cradle Assembly** (#11) mounts. With your hand, rotate the head of the mount until the slot and level are pointing in the north-south direction. Adjust the Latitude **Adjustment Handles** (#26) until the bubble is centered. With your hands, rotate the head about the DEC axis 90 degrees until the slot and level are pointing in a east-west direction. Carefully rotate the head about the RA axis until the bubble is centered. Repeat these two procedures until the bubble stays centered throughout the DEC rotation. Once it reads level throughout the rotation, Lock the **RA Lock** (#33) and apply one set of alignment arrows along the RA housing seam on the east side of the RA housing.

Polar Home Position ... (con't)

Without moving the mount, carefully unscrew the **Counterweight Shaft** (#22) from the mount. Unlock the **RA Lock** (#33), and rotate the head 90 degrees so the **Counterweight Shaft Base** (#20) is pointing toward the east. Screw the Counterweight Shaft (#22) back into the mount. Rotate the head around the RA axis until the Shaft is horizontal. Place the level on the shaft and adjust until the bubble is centered. Lock the **RA Lock** (#33). Place the level in the Cradle Slot and tighten the Cradle Lock Knob (Fig. 7, Page 12) to hold it firmly in place. Now rotate the head about the DEC axis until the level is horizontal - the bubble is centered. Lock the **DEC Lock** (#17). Apply another set of arrows on the top side of the DEC housing along the DEC housing seam.

Now adjust the **Latitude Adjustment Handles** (#26) until the pointer on the **Latitude Dial** (#28) reads your approximate latitude, loosen the **RA** and **DEC Locks** (#17 & #33), adjust the mount so that the arrows line up - and you should be in **Polar Home Position** with the Cradle Slot pointing due North-South over the front North leg. Lock the **RA** and **DEC Locks** (#17 & #33), mount the Cradle / OTA assembly and you are ready to continue to your final alignment.

In Polar Home Position, the **DEC Motor** (#34) should be on the **WEST** side of the mount.

Axis Alignment Procedure ...

OK, so now you are getting anxious to get out there and use your new scope. Just a couple of more adjustments and your mount will be ready to go.

Make sure your telescope is properly balanced as described on Page 13. When balancing, be sure to have any of your usual accessories mounted on the telescope - including one of your eyepieces.

Tip: Once you have the telescope assembly balanced, wrap a piece of masking tape around the counterweight shaft to mark the positioning of the upper most counterweight. The other weight(s) can be left against the bottom of the counterweight shaft. Also place a small piece of tape or one of the alignment arrows on the OTA indicating the outer edge of the cradle rings. This will let you avoid having to rebalance when you get outside ready to view.

So far, we've been assembling and aligning the various components of the mount. Now it's time to mount the **Cradle and OTA** assembly (#10, 11 & 14). Once you have it assembled, turn to Page 48 (Appendix B) and perform the **Axis Alignment Procedure**. You can also elect to use **Method 2** on Page 51 and allow AutoStar to assist in the set up.

Tip: Be careful when adjusting the Cradle Adjustment Screws (Fig. 40, Page 49). The entire OTA / Ring assembly is held to the mount by the two center screws. Overtightening could strip the metal and result in your OTA coming loose. Remember, never remove the weights with the OTA attached.

This Axis Alignment insures that your OTA is actually pointing where AutoStar thinks it is. It matches the alignment of the OTA to the mechanical alignment and assembly of your mount.

If you have one of the SN Reflectors, now is the time to check the collimation of your optics as described on Pages 39 - 41. Once you are satisfied with your collimation, it's time to plug in the electrical components (batteries and AutoStar) and go outside for your first viewing - commonly referred to as ***First Light***.

Tip: Remove one of the three adjustment screws from the secondary (Fig 31b, Page 40). Take it down to your local hardware store and get a matching threaded allen bolt about 1/2 inch longer. It will have a larger head and be much easier to adjust. Be very careful when working in close proximity of the Corrector Plate (#9). You might want to put some shrink-wrap tubing over the handle portion of your allen wrenches to give you a better grip and to "cushion" the blow should you accidentally touch a piece of your scopes optics.

The preceding assemblies and adjustments are basically one time - essential for initial setup, but not necessary every time you go out. They should be checked from time to time as they will affect the accuracy of your GoTo operations.

First Light ! ...

At this point your scope is assembled and has had all of the preliminary alignments and adjustments made. Assuming you have read through the manual on AutoStar operation, now it's time to go out and view the heavens.

Tip: Here is a methodical procedure that works for moving your scope form the house to your outdoor observation location.. Spread a large 12' x 12' heavy duty painters canvas over the ground where you are going to set up. This gives you a nice clean surface and will help in finding any small parts that may get dropped such as set screws, batteries, etc. It also gives you a clean protected area to set your battery pack, eyepiece cases and other accessories. You can find these drop cloths at any major hardware store.

Remove the OTA from the ring assembly and carry the tripod and head assembly to your set up location. Carry out and install the counterweights onto the counterweight shaft. Use the indicator you put on the shaft for correct positioning.

*Roughly align the North Leg (one with the star) so it is pointing toward Polaris. Carry out the OTA and mount it in the cradle using the alignment arrows you applied for proper balance. Do not overtighten the **Cradle Ring Lock Knobs** (#13). Tighten just enough to prevent the OTA sliding in the rings*

Plug in the AutoStar and battery pack. Set the AutoStar parameters as described on Pages 16 and 19. Perform a **"Calibrate Drives"** from the AutoStar menu. Align your Viewfinder as described on Page 14. **Train the Drives** as described on Page 20. Now you are ready to perform your first **Polar Alignment. Use a cross-hair eyepiece for increased accuracy.**

Polar Alignment ...

There have been volumes written on how to improve and tweak Polar Alignments. It is true that the better your alignment, the more accurate your GoTo's and tracking will be. The goal is to get a good alignment and not spend all of your time working on "perfection". The following will give you a very good polar alignment with the minimum amount of time.

Tip: When the temperatures inside your home vary greatly from that of outdoors, setting the scope outside an hour before you plan to observe will allow all of the optical components to equalize to the outside temperature which will result in better viewing.

Loosen both the **RA** and **DEC Locks** (#33 and 17). Put the scope in Polar Home Position by matching up all of the alignment arrows on the mount. Lock the **RA Lock** (#33). Turn the scope about the DEC axis so it is pointing in an east-west position. Remove the **Polar Viewfinder Cap** (#18). Turn on the **Polar Viewfinder Illuminator** (#30). Adjust the **Latitude Adjustment Handles** (#26) and gently nudge the tripod back and forth until the cross-hair in the **Polar Viewfinder** is centered on Polaris. Replace the **Polar Viewfinder Cap** and *manually* (do NOT use the AutoStar control) return the scope to the **Polar Home Position**. Don't forget to turn off the **Polar Viewfinder Illuminator** (#30). Lock both the **RA** and **DEC Locks** (#17 and 33).

Tip: Disregard the four sided figure in the Polar Viewfinder and the four-star grouping referred to in Fig. 36 on Page 48. The four-star grouping is only applicable if you are located in the Southern Hemisphere.

Perform a One Star Alignment from the AutoStar menu. At this point you are ready to begin finding and observing. The **Guided Tour** feature of the AutoStar is a nice place to start.

*Tip: The **One Star Alignment** forces you to fine tune your **Polar Alignment**. For improved accuracy, after performing the **One Star Alignment**, unlock the **RA** and **DEC Locks, manually** return the scope to the **Polar Home Position** using only the two alignment arrows on the **RA** and **DEC** axis. Lock the RA and DEC Locks and follow the AutoStar instructions for an **Easy Alignment** - disregarding any instructions for moving or adjusting the mount.*

When You Are Finished ...

Manually return the scope to the **Polar Home Position**. Turn off the power and remove all accessories from the scope. Immediately replace the cap / plug in the focuser tube. Replace the protective cap over the front of the OTA. Unlock the **DEC Lock** (#17) and turn the scope to an east-west orientation. Carefully release the **Cradle Lock Knobs** (#13) remove the OTA and carry it inside. Disassemble the mount in the reverse order of set up and carry inside.

Tip: After a night of observing in chilly weather, when you carry your scope inside, the moisture in the warm air of your house will begin to condense and cover your scope with dew like moisture. Do NOT attempt to wipe this moisture from any optical surfaces. Replacing the dew caps / tube covers before going in the house drastically reduces the amount of moisture reaching the optical surfaces while they re-equalize to the inside temperature. Owners of the SN series of scopes may want to cover the primary mirror end of the scope with a tight fitting good quality shower cap to reduce the amount of moisture and dust entering the OTA from the back end of the scope.

Storage ...

Try not to store your scope in its assembled state for long periods of time. The weight of the counterweights and OTA assembly on the LXD55 head could cause premature wearing and indentations on the bearings and gears. SN10 owners can stand their OTA's upright with the primary mirror end on the floor. AR series owners can hang their scopes by the chrome handle under the focuser.

Tip: We have all seen those little packets of Silica Gel crystals that come packed in electronics, sometimes in the pockets of new coats and in vitamin pill containers. I went to my local Walgreen's and asked if they would save them for me - they gave me dozens - free for the asking. Take an empty standard 35mm film cannister and drill several 1/4" holes in the end of it. Stuff two of the little silica gel packets inside, snap on the cover and use the cannister as your focuser plug. It will help absorb any excess moisture which may get inside of your tube. You can also get a couple of flat pill boxes, drill some holes, stuff with the silica crystals and velcro to the inside of your dew cap. A couple of the same film cannister assemblies can also be used in your eyepiece case.

Courtesy of: David (Warp) Sherfy
St. Louis, MO.
Meade LXD55 - SN10-UHTC / AR6

AutoStar Hints & Tips

This list is in no particular order. It is taken from the LXD55 Yahoo! User's Group database (with permission), and includes the contributor's name if he or she so desires. You will see redundancies occasionally, but we've found that most are worth repeating. If you'd like to contribute to this (or any other) list, please send us an e-mail with a subject heading of "LXD55 Database", and we'll consider it! Thanks!

The AutoStar And Temperature Extremes: All AutoStar units are different. Some are more prone to temperature extremes than others...those that are cold-sensitive are ALSO typically HEAT sensitive as well. At temperatures below 27F, the LED readout becomes frequently muddled, as the temperature continues to fall, many users report a totally BLANK LED readout, yet the Autostar continues to function (if you can figure out which button to push!). The Autostar will fail altogether if exposed to temperatures lower than 20-28F for more than about twenty minutes. For dependable use, there are two things that should be remembered about the Autostar that are typically NOT a factor with the LX200 classic hand box:

a. Keep the hand control warm. Put it inside your coat or pocket when not necessary to observe.

b. Try to run the telescope ONLY off of a very good external DC power-station OR from AC power (better).

Note also that there have been many reports that suggest that the Autostar is much more sensitive to cold when the humidity/dew/frost situation is high, suggesting that the water content of the air is also a contributing factor. It appears that cold nor heat affects the long-term dependability nor use of the internal circuit boards of the system based on the LX200 classic models, the LX90, and the ETX series of scopes.

Where To Attach The AutoStar Controller: I attached velcro to the Autostar and a mating piece on the top of each leg so that no matter the telescope orientation, there is a nearby place to put it.

Tracking Rates And The Moon: The MOON MOVES independently of the background stars...it moves against that background its entire width every hour (so that's one arc minute "drift" every two clock minutes)! The Autostar knows that... but you've got to -ask- it to track at Lunar speeds...

1) Setup > Telescope > Tracking Rate >[enter] [scroll]

2) You've got 3 choices: "Sidereal", "Lunar" and "Custom". The number displayed is "tenths of percentage of sidereal", and Lunar is -3.5% (if you select Lunar, then scroll to Custom, it'll show the current offset).

However, there will be some times when it will -still- drift, because the Moon's orbit is not parallel to the celestial equator. There will be slow north/south motion, and that also has a tiny effect upon the east/west motion.)

URL's For UpDates, Tours, Comets & More: Keep in mind that versions and specific URL pages may become outdated. If you find a link that isn't good anymore, drop us a line and we'll change it. Firmware for your Autostar: current version 25Ea.:

http://www.meade.com/support/auto/Build.zip

Updater to transfer that, and other stuff to your Autostar:

http://www.meade.com/support/auto/ASU351.exe

The Updater itself can fetch many items directly from the Web for you... under the File/Import menu choice, it offers to run and get them.

The Comets, ISS, Satellites, a few tours are all sub-links from Meade's Support page:

http://www.meade.com/support/auto.htm

The Comets from that page are the Harvard Astrophysical Observatory's "bright" list, tailored for the Autostar/Updater:

http://cfa-www.harvard.edu/iau/Ephemerides/Comets/Soft16Cmt.txt

The satellites... well, Meade's page leads you to Celestrak. There you have the ability to grab a -number- of "special interest" lists... from just manned satellites (ISS and Progress) to the 100 (or so) Brightest, to all sorts of types. The index page is at:

http://celestrak.com/NORAD/elements/

and the subgroups are under that.

Tours... well, there's Meade's sub-page which provides Tonight's Best; Messier Marathon; How Far is Far; Star Groups; A Star's Life.

On Mike Weasner's site there are others (a dozen or so) and by doing web-searches you can find them all over the planet (I've fetched some from the UK, Portugal, Holland, Australia).

That's the list i use for much of my observing. Tours are the most erratically found.. they pop up in a variety of places. Satellite data can be "too much" or "too little" depending upon your interests... the Updater itself can serve as a "list editor" to prune or meld different items or subtypes. That applies to Comets and Asteroids, too. (see Meade's page for the link to Asteroids, but it's currently:

http://cfa-www.harvard.edu/iau/Ephemerides/Bright/2001/Soft16Bright.txt

which is a little obsolete... you can use:

http://cfa-www.harvard.edu/iau/Ephemerides/Bright/2002/Soft16Bright.txt

(note that it's 2002, instead of 2001)

More About Your AutoStar Version: The -full- version number is under Setup > Statistics > [enter][scroll UP]

The current version is 25Ea (as of this post). The "E" means English. The "a" is the actual sub-version identifier. In the past there have been -many- subversions of a major

number (2.1Eh, 2.1Ei, 2.1Ek, 2.1Er for an example from last year).

Courtesy of: Dick Seymour

Which AutoStar Version Do I Have?: The easiest way is to read the first screen when you turn it on. It will print something like: (c)02 MEADE [24e] (this may not be exact, but you get the idea). [24e] is the version. The LXD55's started shipping with 23e....

Courtesy of: Jason Carden

(check: www.meade.com/support/auto/Build.zip to see what the latest version is.

Changing Scrolling Text Speed: Press and hold the UP arrow key to increase the scrolling speed when a message is scrolling across the display. Press and hold the DOWN arrow key to decrease the scrolling speed when a message is scrolling across the display.

Motor Unit Fault Message: Motor Unit Fault can be caused by many things: low batteries, dragging axes, and: failure to Calibrate the drive. One of the steps which is a "good thing" to do once in a while is: Setup > Telescope > Calibrate Drives [enter].

The two motors will run for about 2 seconds each, and it's done. What it's doing is tuning the encoder pickup circuits for optimal operation. If you have -never- done it, then that could well have been the cause of the MUF.

Courtesy of: Dick Seymour

How To Start And Stop A Spiral Search: You can do a spiral search anytime by holding down the GoTo key for about three seconds, or, if you just completed a GoTo, by just tapping the GoTo key. Once a spiral search has started, pressing any key will stop it.

My AutoStar Does Not Offer LXD55 As A Choice: Make sure you have your Dec motor cable plugged in before you power up.

Set-Up & Alignment Issues

This list is in no particular order. It is taken from the LXD55 Yahoo! User's Group database (with permission), and includes the contributor's name if he or she so desires. You will see redundancies occasionally, but we've found that most are worth repeating. If you'd like to contribute to this (or any other) list, please send us an e-mail with a subject heading of "LXD55 Database", and we'll consider it! Thanks!

Polar Aligning The PolarScope: Set your scope to "Polar Home" (barrel set to Dec=90, RA will be discussed...), set the Latitude plate to your latitude (I'm assuming you don't -change- the latitude plate from night to night, so once you've got it, it's good). IF you can, locate a spot where you can set up the tripod's legs the same way every session (I know, I know... star parties are going to be difficult.. but you'll have hordes of helpful onlookers then... (don't be the -first- to arrive)).. I have marked my viewing deck with blue long-last masking tape for the tripod feet.

Now comes the RA part: rotate the RA axle to a comfortable viewing angle (the tube's position in the clamps will affect this). Look through the viewfinder and bring Polaris near the center by nudging the tripod legs.

Maximum Accuracy (extra points): Center Polaris. Now swing the RA axis through quite an angle and verify that Polaris stays rock-steady in the 26mm eyepiece. If it -moves-, then your DEC is not truly 90 degrees. Adjust and swing and adjust until Polaris doesn't move. Perhaps loosen and set the DEC dial to match.

At this point we digress: Try to learn how to -locate- the pole relative to Polaris, or Polaris relative to the pole. It's pretty easy... the far tip of the Little Dipper's Bowl is the star Kochab. If you imagine a line drawn from it to Polaris, the POLE is 3/4 degree towards Kochab from Polaris (the Full Moon is a half-degree... look at it through your viewfinder, and through the 26mm eyepiece to get a handle on how big 3/4 degree would be (1.5 moons).

Now, with that 3/4-degree spacing in mind, return to the viewfinder, then the eyepiece, and adjust the tripod to place Polaris where the offset should put it. Where that is will rotate in your field of view throughout the night, and throughout the year. At this time of year (summer), at 9pm, Polaris is almost directly "below" the pole (i.e. closer to the northern horizon's dirt and houses). You want Polaris to be off-center in the direction caused by raising the tip of the telescope's barrel (by either tilting the latitude plate, or by shortening the rear leg. At other times of night or year (at 3am, or in 3 months at 9pm, Polaris will be due East of the Pole) you'll perhaps need to shuffle the tripod -sideways- to reach the offset.

OK... you have just done what your Polar Alignment scope does with a few circles and squares. Power up and proceed to align as you normally do.

Improving GoTo Accuracy: After doing the full Alignment, GoTo (during summertime) Arcturus. If it's a bit (more than 1/4 degree) off, you can press the [enter] key for 3 seconds. Release. It'll ask you to center it, and then tap [enter] again. That's SYNCing. You've told the Autostar "it's over -there-, dummy!" ... you probably already knew that.

But here's the new stuff:
GoTo Polaris. IF it misses, do NOT use the Autostar, but shuffle the tripod (or latitude adjustment screws) to -halve- the error. That's right.. don't -remove- the error, just cut it in half. Now GoTo Arcturus. Again, SYNC to center it. Now GoTo Polaris. Again, move the -mount- to halve the error. Repeat until satisfied (Arcturus dead on), or until bored (i get bored after three visits to Polaris).

You're combining mechanical improvement of tripod with telling the Autostar (via SYNC) that you're changing things. It's another approach which can yield accuracies approaching "drift alignment", and much faster.

You could toss in a few GoTo's other bright stars (or fun DSO's) in the midst of this to stay awake and enthralled. But Arcturus and Polaris are a good pair for this trick.

Measuring GoTo Accuracy: Don't use the Moon and Planets as measures of the GOTO accuracy (and don't SYNC on them)... they are -calculated- positions, versus the fixed data of the background stars. And those calculations can occasionally be a little (or a "lot" (20 arcmin?)) off, depending upon our relative orbital positions.... the Moon is a really complex problem...)

Courtesy of: Dick Seymour

Moving The Scope Without GoTo: If you want RA tracking without GoTo alignment, just pick Setup >Targets > Astronomical and the RA motor starts running at the sidereal rate. Then just move the scope manually, using the clutches to track an object as desired.

Courtesy of: CS - Otto

Aligning, Calibrating & More: The Polar mount of the LXD55 wants to be carefully, mechanically aimed at the celestial pole. The better it's aimed, the better it will do. But it'll do "OK" if it's a little bit off ("little bit" is proportional to how much mis-aiming you're willing to live with... there are nights i'm happy if my LX200gps arrives within 2 degrees (4 full moon widths) of a target in Polar.) Alt/Az mounts are -much- easier to set up... an ETX 90/105/125 (or any of the DS-scopes) is almost "plop and go" for getting started. The LXD's German Equatorial Mount (GEM) isn't that simple. The Autostar -can- correct for moderate errors in setup.. probably 5 degrees are easily within its grasp... but you'll have to help it along in those situations.

Let's hit Calibration first: it's very simple: just hit the [mode] key when it's asking to Align, (so you see SETUP / Align on the screen)... now use the scroll down key to reach SETUP / Telescope. Press [enter]. Now you're seeing Telescope /Telescope Model. Press the scroll down key until you see "Calibrate Motor" (or "Calibration", i forget which). Press [enter]. The scope will make two short moves, and that's it. You've calibrated. Turn off the power, count to five, then power back up. Do a normal start up sequence...

Let's play with Polar Easy or Polar Two Star alignment: Don't worry if an alignment star does -not- arrive in the field of view when the Autostar slews to where it guesses it is. Just use the keys to bring it to the center of the field of view, and then press [enter]. If the guess was way off, feel free to tap a speed key to hurry the procedure along.

After you have done that to the two alignment stars, the Autostar -will- factor in how far off the tripod is, and will (hopefully) slew to your targets with reasonable accuracy. Don't sweat it if it misses the Moon and Planets by a bit... it has to calculate their orbits, and sometimes gets a bit off. The stars (and deep space objects) are the true bellwether of how well your alignment was.

So now let's GoTo a star... how about Capella? It's the bright one in the northwest. (Star > Named > Capella [enter] [goto]). After it beeps, if it's not well centered, do this: Press the [enter] key for 3 seconds. Release. The scope will ask you to center the object. Now use the slew (and speed) keys to center it. Now tap the [enter] key again. The Autostar will say "synchronized". You've just corrected its idea of what's where for that area of the sky. You can now visit nearby objects, and the scope will probably do a decent job of centering them. If you slew someplace far away (Leo, use Regulus), and if things aren't centered to your liking, do the press-hold-release-center-tap sequence over and things should get better.

The Autostar really -can- cover for quite a bit of misalignment of the tripod/latitude/polar-axis. But it's a learning experience. Alignment -will- come with practice (or sometimes, pure luck). But GEM is -not- drop-dead simple to set up, and has a moderate learning curve. While you're wandering up the curve, you'll still have a chance to see fascinating things through the scope.

Courtesy of: Dick Seymour

Pointing North When Polaris Is Hidden: I bought a compass for partly cloudy nights when Polaris is obscured. Read the compass on a clear night when pointing at Polaris and use that value to point your tripod and mount on partly cloudy nights. Its usually good enough for viewing. I've done this when I take my scope across town and do not have a mark on the ground for my tripod legs.

Courtesy of: Jason Carden

PolarScope And OTA Hints For Better Alignment: Loosen the 3 allen screws in the collar between the hours circle and the reticle housing. Slide the polar scope out of the polar shaft. Look for some tape wrapped around the polar scope. I removed it on mine because it was shredded and rolled into a clump in more than one area. I reassembled mine without any tape in this area. Next, look inside the collar for an O ring. Make sure the O ring is intact because it centers the polar scope in the collar. Now slide the polarscope back into the collar and just barely snug the allen screws. If the polar eyepiece fits loosely, two wraps of white teflon plumbers tape on the eyepiece threads will snug it up nicely.

Next, I set my mount on the tripod in alt/az position (No counter weight or scope) and sited in on a stop sign about a mile away. Look through the polarscope eyepiece while rotating the RA shaft back and forth from position A to position B (Page 49, Fig 38 & 39 in the manual) After some trial and error I was able to rotate from A to B adjusting

the allen screws a little at a time until the cross hair stayed on the stop sign.

Now put the counterweight and OTA on and look through the OTA eyepiece to see if it points to the stop sign. Mine did not... it was way off. Use the manual's Fig.40 on Page 49 to locate the allen bolts used to attach the dovetail to the tube rings. These bolts will raise or lower the angle of the OTA to the RA axis. Adjust these until the stop sign is centered in the OTA eyepiece. Your tube should now point to the same spot as your polarscope. Verify this by looking through both eyepieces while moving from position A to B. You can use any target you wish, Polaris even, but I found it easier to do this in the daytime and the stop sign was convenient. Appendix B Page 48 Axis Alignment Procedure covers basically the same thing, these are just my interpretations and findings.

Now, after a quick polar alignment, and then an easy alignment, my scope brings objects within the field of view of the 26mm eyepiece. I'm sure if I used targets that are further away it would get even better.

Courtesy of: Mickey Smith

Polar Alignment - Short Version:
1) set up tripod and mount sans scope with "star" leg pointing north
2) level mount using tripod legs and bubble level (sold separately!)
3) adjust azimuth and latitude using mount's knobs and T-handles (push-pull) to put Polaris on the polar scope reticle. See manual Page 48
4) attach OTA and test for orthogonality on both sides of RA axis for extra credit
5) use drift align method for super polar precision (not necessary)
6) Relax and enjoy the views!

Orthogonality & Alignment: Orthogonality is just tech talk for how well the scope and axes are aligned. Your manual describes the procedure for tweaking the adjusting screws where the scope mounts to the saddle. Drift alignment is not needed for GoTo, and is used mostly for imaging. Polar alignment is easier with the telescope removed. By leveling the mount, Autostar has the best chance of putting alignment stars in the field of view (FOV). Please keep in mind that the advertised GoTo precision is "only" 15 arc minutes, which is 1/2 the diameter of the Moon.

Courtesy of: CS - Otto

Aligning The PolarScope With The Mount: Level the tripod. Without the OTA and counterweight shaft attached, put a level on the saddle plate were the OTA attaches, adjust the latitude to zero, then fine adjust the latitude until it is level. You should now be able to rotate the saddle plate 360 and be level in all directions.

Rotate RA 90 degrees so the counterweight shaft, which can now be reinstalled, is parallel to the ground.

Place the level in the saddle against the side that has the attachment screws and level this parallel to the floor. Adjust the declination setting circle to read 90 degrees.

Rotate DEC using the setting circle to read 90 minus Your Latitude. For me that is 90 - 30 = 60.

Now adjust the latitude bolt until the level (Still in the saddle plate) is level again.

All of the above will give you a more accurate latitude adjustment. It is not hard once you understand how it goes.

Put the OTA on the mount and get a good alignment on the finder scope. Use the AZ fine controls to align Polaris with the vertical cross-hair. Depending on the time and position, you will be out of adjustment in Azimuth by as much as .85 degrees, but that is okay for now.

When you align Autostar do not worry about centering on the two stars it locates just press enter to accept them. Once the alignment is complete, do a GOTO on Polaris, then using the Fine Azimuth Control and the Latitude Adjustment center the telescope on Polaris. This will take the .85 error out. Next GOTO another star like VEGA, center it in the telescope, and press the ENTER key until a message that says "Press Enter to Synch" appears, this will synchronize the scope given the fact that it was moved in AZ and LAT.

I have only used this method twice so far but can align without the POLAR scope and best of all, I am NAILING everything in the center of the EP at 50X and 1 deg.

Polar Home Position & Setting Circles: In PHP the DEC is at 90 degrees, and RA varies depending upon where Polaris is relative to NCP. When you GOTO Polaris from PHP, the scope moves slightly to a DEC of 89.15 from the original 90 Degree position. Think of Polaris rotating around NCP like the hands on a clock. After you do a GOTO on Polaris, you could calibrate the RA setting circle if you like, but that will change depending on the time. Consider all of the different RA positions you have seen when looking at Polaris, yet they are all RA 2:31:51. In short, Relative to PHP, DEC is fixed and RA is variable.

Courtesy of: Randy Rourke

Pointing Accuracy & Optical / Mechanical Alignment: I was having some initial pointing accuracy issues with my 8" SNT. Most of my problems seemed to be related to the fact that the optical axis of the scope and the mechanical axes of the mount were not properly aligned from the factory. There is a procedure (two of them actually) in the back of the Autostar manual that describes how to make this adjustment in the daytime. However, I find it easily checked and tweaked at night right before doing my polar alignment.

First step is to rotate the OTA in the cradle with the focuser directly opposite the counterweight shaft (Assuming you're using a SNT here).

Next step is to use the polar scope (assuming it is aligned) to put Polaris dead center on the cross-hairs (which is NOT the correct polar alignment position). Double check the polar scope by rotating the scope on the RA to make sure Polaris doesn't move. Do not make any further adjustments that will move Polaris off the cross-hairs throughout the rest of this procedure - this is very important.

Now - put a low power eyepiece in the scope and point the counterweight shaft straight down. Move the scope on the DEC axis until Polaris is centered as best you can - then lock down the DEC. Loosen the RA and manually swing the scope 90 degrees in each direction. If Polaris moves side to side, use the hand controller to move Polaris left-right (DEC only) to a position halfway between the two points. When you have it right, you can swing the scope through 180 degrees and Polaris will move very little from side to side. (Once you get to this point, you shouldn't move the scope in DEC anymore until the final step below is completed).

Unfortunately, you've probably noticed that Polaris is also moving up and down in the FOV as well :-(You now have to adjust the screws on the bottom of the dovetail cradle in order to eliminate this movement. Go 1/2 the distance you think you need to go at a time, then swing the scope 180 degrees again to check your progress.

WARNING! Do not apply excessive force to the dovetail adjustment screws! It is made from cheap cast aluminum and the centers of the screws holes will break out (voice of experience, here)!

Once the dovetail screws are properly adjusted, you should be able to swing the scope through 180 degrees of motion on the RA and Polaris should move very little. You are done.

You can now proceed to tweak the polar alignment if you want. Determine the current hour angle of Polaris and offset it the proper distance and direction from the cross-hairs in the polar scope with the adjusters on the tripod. If the counterweight shaft is pointing straight down, you are in the polar home position and are ready to do the Autostar alignment.

One little problem remains that can degrade the pointing accuracy of the GEM mounted scopes vs. an Alt-Azimuth mounted scope. The optical axis of the scope is sometimes not exactly parallel with the mechanical axis of the tube. This is mostly affected by the optical collimation of the scope. Always make sure the collimation of the scope is done accurately before attempting to do the adjustments described above! If you don't, and you collimate the scope last, you've just undone everything. Even when the scope is collimated accurately, the optical axis and the mechanical axis may be a little different. If this is true, then a potential problem arises that is not so easily fixed...You rotate the optical tube in order to move the focuser to a more comfortable position. You have just misaligned the optical axis and the mount again. (The only cure would be to readjust the radial position of the mirrors within the optical tube to make sure the two axes were perfectly parallel - not a job that most of use have the ability to tackle). Scopes with a rotating star diagonal (including SCT's) and most alt-azimuth mounts don't have (or need) rotating tubes and thereby avoid this potential problem.

Courtesy of: Greg Granville

Mount & Tripod Hints

The following suggestions are listed in no particular order. Most of them come from members of the Yahoo! LXD55 Newsgroup (with permission). Contributor information is given after their suggestion (or not) according to their wishes. You may notice some redundancy, but we have found that some things are well worth repeating. If you wish to contribute to this, or any other database, send us an e-mail at opt@optcorp.com, and put "Information Motherlode" in the subject heading. We will certainly consider it. Thanks!

Adjusting The RA / DEC Lock Levers: I noticed someone mentioned that they "overtightened" their DEC or RA lock lever and it jammed up against the motor housing when the scope slewed. I've found that the axes locking levers may require readjustment after a bit of use in order to maintain a firm lock without hitting the plastic motor housings. Simply remove the phillips head screw from the locking lever, remove the handle and rotate it counterclockwise one or two notches, and then reinstall the screw. Problem solved.

Tripod Hints: Several people have mentioned that the aluminum tripod is a bit more rigid if the tripod is not extended any more than necessary to level it. Another significant portion of the flex occurs at the point where the top of each tripod leg joins the tripod headpiece. The problem here is that the fit of the pivot bolt (the one with the large wing-nut) is a little sloppy. However, this can be largely overcome by taking each of these bolts completely out, and removing the headpiece. There are a set of approx 2-3 thin teflon washers on either side of the top if each tripod leg. Remove all these teflon washers and put the headpiece back on and put the bolts back in. Now, when you setup the tripod, make sure the legs are spread out firmly against the spreader bar before tightening the wing nuts on top (Pull outward on each leg as you tighten the upper wing-nuts). Without the washers in place the top of each tripod leg will have a much more secure grip and will not pivot or shift at all as it would do when the teflon washers were in place. The tripod still has a few minor flex points, but the stiffness seems substantially improved.

Courtesy of: Greg Granville

Removing RA Motor Assembly: To remove the RA motor and electronics assembly from the mount, you must remove a single cap screw from the bottom of the mount casting. There is a recessed hole with one hex cap screw that holds the entire assembly on (4.5mm Allen wrench). Motor covers can be removed for inspection, cleaning, and parts alignment. While it's off, worm gear block can also be adjusted if necessary for backlash. Be careful, as this may invalidate your warranty (always check with Meade first if you are not sure).

Courtesy of: CS Otto

How To Use The Setting Circles: Point at a Star you know. Spin the RA circle so that the star's RA is marked by the pointer. When you wish to move to another star, hold the circle steady, and move the telescope (which carries the pointer) until the pointer points at the new star's coordinate.

On -some- models of telescope, the numbered circle moves with the scope, and the pointer remains steady. But the principle is the same. You only "set the RA circle" when you're about to change targets. While you're watching the target, the circle setting may become inaccurate (it varies between telescope models).

Courtesy of: Dick Seymour

Miscellaneous Hints & Suggestions

These entries are in no particular order. They include posts from the LXD55 Yahoo! User's Group (with permission), andlist the contributor's name if he or she so desires. You will see redundancies occasionally, but we've found that most are worth repeating. If you'd like to contribute to this (or any other) list, please send us an e-mail with a subject heading of "LXD55 Database", and we'll consider it! Thanks!

EyePiece / Exit Pupil Lesson: In general, most people under 30 years of age can dilate their pupils as much as 7mm in full darkness. People over the age of thirty start to lose the ability to dilate their pupils as much. For someone of age 40 or more, 5mm is a often as far as their pupils will dilate.

If the exit pupil of a telescope / eyepiece is larger than the amount the observer can dilate their pupils, then the extra light is not making it into their eye and is being wasted. The exit pupil of a telescope / eyepiece is most easily calculated by dividing eyepiece size (in mm) by the f/ratio of the scope.

The f/4 SNT's come standard with a 26mm eyepiece. Divide that by 4 and you have a 6.5mm exit pupil. This is over the limit for eyes 40+ years old, but younger eyes can often dilate this much, or even a little more.

Nothing terrible happens to the image if you exceed the size that your pupil can dilate. I've used a 32mm UO Widescan eyepiece on my 8" LXD55. This yields an exit pupil of 8mm and a magnification of just 25x. This eyepiece has an 84 degree apparent field of view and gulps in an incredible chunk of sky with this scope. I put a 2" Orion Ultrablock filter on this eyepiece and observed almost all of North American Nebula in one field of view! This is something I've never seen in any of my scopes, or anyone else's, in 12 years of deep-sky observing.

In general I'd agree that using too large of an eyepiece on a scope with a fast f/ratio is a waste of light... but it's not necessary to get preoccupied with that as a rule that should never be broken

Courtesy of: Greg Granville

Finder Bracket Slipping On OTA?: I have found you can buy sheets of thin rubber at Lowe's. I cut an oversized square, punched holes for the mounting bolts, and mounted the finder over this and tightened it down. Now the finder base is rock steady.

Courtesy of: Michael Good

EyePieces & Fast Optical Systems: The 8" and 10" are fast f/4 scopes. That means a fat optical path, which doesn't work as well for Orthos and Plossls. Axioms, Radians, Pentax XL, Nagler, Meade UWA, etc. will run better with the fast scopes.

Courtesy of: CS - Otto

FreeWare For Controlling The LXD55: Cartes Du Ciel (Free) works great from laptop to control my LXD55 AR5. I click on an object on the screen choose GOTO and the scopes slews to it. After the Autostar beeps, I get up and theobject is within the field of view of my 15mm TV Plossl. Cant beat that !

Courtesy of: Mickey Smith

Worrying About The Sun And Daytime GoTo's: Leave the front cover on until the GoTo has Got There. If you don't have a nose-cover for the LXD (or don't want to fight it), a shower cap will do (used for years on a 6"). Don't forget to cover the front of the -finder-, too. p.s. If you PARK when you power off (Utilities > [scroll up twice] Park Scope [enter], it will -not- request to be aligned the next time you power up. It'll go straight from "Daylight?" to "Object".

Basic Info About Right Ascension: RA values increase as you arc from the west to the east (RA values are in Hours and Minutes). The RA of the stuff rising on the eastern horizon is *increasing* with time... so the stuff rising 5 minutes from -now- will have an RA value which is 5 RA minutes greater that what's there -now-.

Pick a star, any star (old magician's trick)... let's say Arcturus (almost overhead in the early evening in summer)...it is at about RA 14:20. *THAT* is where RA=14:20 is... and as the evening progresses, RA=14:20 will remain with Arcturus... moving westward across the sky.

Come back in 2 months... Arcturus will be much closer to the western horizon at 9pm... but it will still be RA=14:20. Overhead two months from now will be roughly RA=18:20

("overhead" advances two RA hours every month, for the same day number and time...approximately).

What Is The Maximum Voltage To Be Used As A Power Supply: Meade has never (that I've seen) published a "maximum" rating. The 4504 (similar motor units, same Autostar) has "15v" on its power jack, and uses a 10-C-cell pack. The original Meade adapters for the ETX90 and LX90 both are unregulated, and put out about 15.8 v unloaded... and they have sufficient rating (an amp over measured demands) that i doubt that they drop below 13v in operation.

Looking at the components inside the scopes, and historically, Clay and I and other have kind of agreed that 16v is the upper limit.. Exceeding that is venturing into less-charted territory. There -have- been reports of damage with 18v supplies (old LX200 supplies)... but those were probably unregulated, too, and really putting out above 20v. The lowest-rated component I've seen were 25v capacitors. The Autostar (and the various subcomponent circuit cards) all have on-board regulators... but if you're running higher voltages, then those regulators have to dump more energy as heat. The motors themselves may actually receive unregulated power (higher voltages makes them move faster at full speed).

So: my recommendation is: don't exceed 16v. 15.8 is fine. 14 is fine, 12 is fine. 10 works...slowly. The area to the immediate left of your Autostar display may get hot in warm weather with high voltage operation... that's where the heat-dumping regulator is. See photos at:

http://www.weasner.com/etx/autostar/ as_schematic.html

If you see the display pixels on that side staying "on", the display may be getting a bit too warm. Unregulated supplies are perhaps -nice-, in that they -will- lower their output if something goes strange with the telescope. A fully regulated, powerful supply would continue to feed full power... as can a 17ah battery (i -use- a 17ah battery on my LX200, but it's fused for 2.5 amps) ("ah" is ampere-hour).

Jason mentioned the Battery Level readout in the Autostar (it's one of the displays you can scroll to if you lean on [mode] for three seconds and release). I've only done the rigorous testing of its levels to voltages once, and have since lost the scrap of paper. But roughly it reads "100%" to 11v, and "68%" at 7 volts. My ETX90 goes weird at 6.8 volts. I've heard of other folks successfully operating down to 50%.

Link To City's Magnetic Variation:

http://www.ngdc.noaa.gov/cgi-bin/seg/gmag/fldsnth1.pl

You can either fill in your specific latitude and longitude, or, if you don't know the coordinates, you can type in your zip code. The site will then fill in all the fields for you, including your elevation. So, this site is also great for getting a quick LAT and LONG for any city.

What's A MUF?: "Motor Unit Failure" is a message the Autostar will display if it thinks the motors are not operating properly... accompanied with a long list of possible causes (it just knows they're not moving like they should). The list includes: low batteries, and something holding the scope from moving. Other (not listed) causes can included dirty encoders. However: After verifying that something -isn't- caught between the moving parts (such as the barrel hitting the tripod), performing a Setup > Telescope > Calibrate [enter] will overcome MUF's caused by changing power supplies (from, say, 10v batteries to a 15v wall adapter), or, for that matter, can prevent slightly-low batteries from messing up the session -quite- yet. Performing a Calibrate will mess up your current alignment.

Courtesy of: Dick Seymour

More Information...

You may find these sites to be helpful in the pursuit of your Amateur Astronomy hobby:

Arkansas Sky Observatory
http://www.arksky.org/

Drift Alignment Method
http://www.darkskyimages.com/gpolar.html

Harvard Education Ephemerides and Orbital Elements
http://cfa-www.harvard.edu/iau/Ephemerides/

Jason's BackYard Astronomy
http://www.geocities.com/jascarden/lxd55addendum.htm

Latitude / Longitude Format Converter
http://www.geology.enr.state.nc.us/gis/latlon.html

Meade AutoStar Update Page
http://www.meade.com/support/auto.html

Messier Catalog
http://www.seds.org/messier/

Mike Weasner's ETX Site
http://www.weasner.com/etx/menu.html

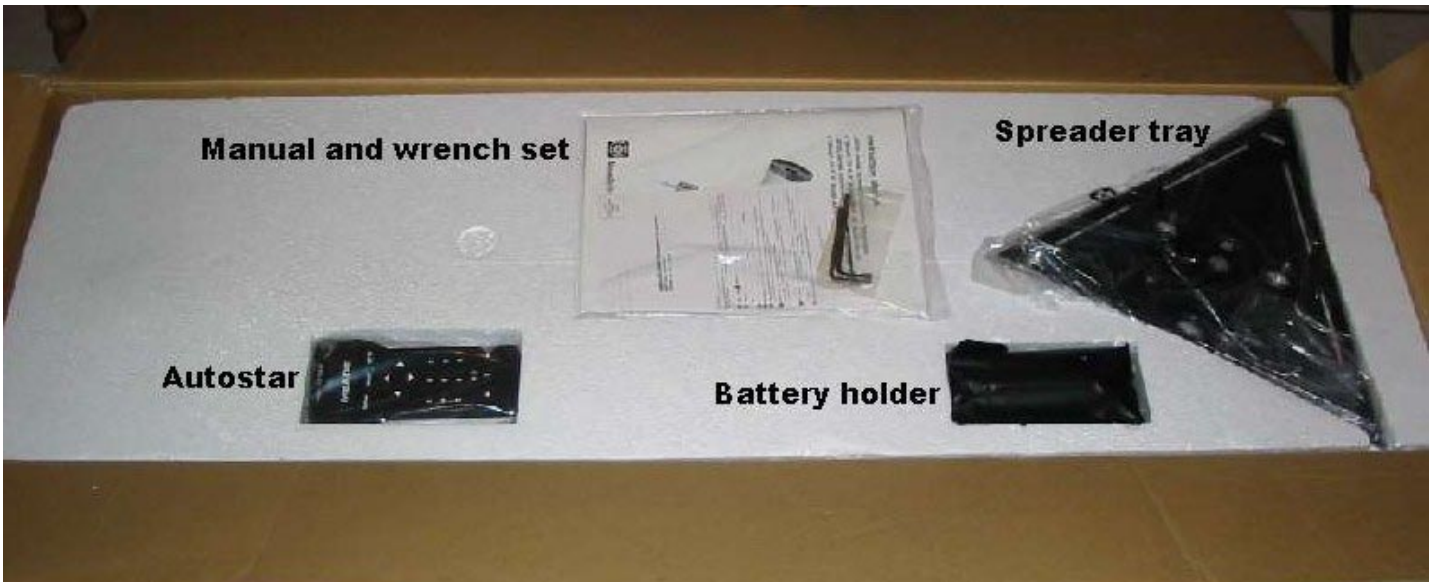
Mike Weasner's LXD Site
http://www.weasner.com/lxd/

Polar Alignment Procedures
http://www.starizona.com/basics/polarg3.html

Yahoo LXD55 Telescope Site
http://groups.yahoo.com/group/LXD55telescopes/

Initial Inspection Checklist

Courtesy of: John Crilly



The parts should look something like this when the box is first opened. Check to make sure that all parts are there and OK.

Battery Holder

Check for damaged wires, case or plug. The ferrite core in the picture is a recent addition to these; many were shipped without it. I wouldn't be concerned if it's not there.

___ ALL OK

-OR-

___ WIRES LOOSE
___ PLASTIC CASE DAMAGED/DEFECTIVE
___ PLUG DAMAGED/DEFECTIVE
___ BATTERY HOLDER DAMAGED/DEFECTIVE
___ BATTERY HOLDER MISSING

Manual & Warranty Card

Check for presence and condition of the manual and wrench set (THREE Allen wrenches). The warranty card may or may not be included. The card is NOT required to qualify for either the warranty or the eyepiece offer.

___ ALL OK

-OR-

___ MANUAL MISSING
___ MANUAL DAMAGED/DEFECTIVE
___ WRENCHES MISSING
___ WRENCHES DAMAGED/DEFECTIVE

AutoStar 497 Controller

Check for presence and condition of the Autostar Control unit.

___ ALL OK

-OR-

___ AUTOSTAR CONTROLLER DAMAGED/DEFECTIVE
___ AUTOSTAR UNIT MISSING

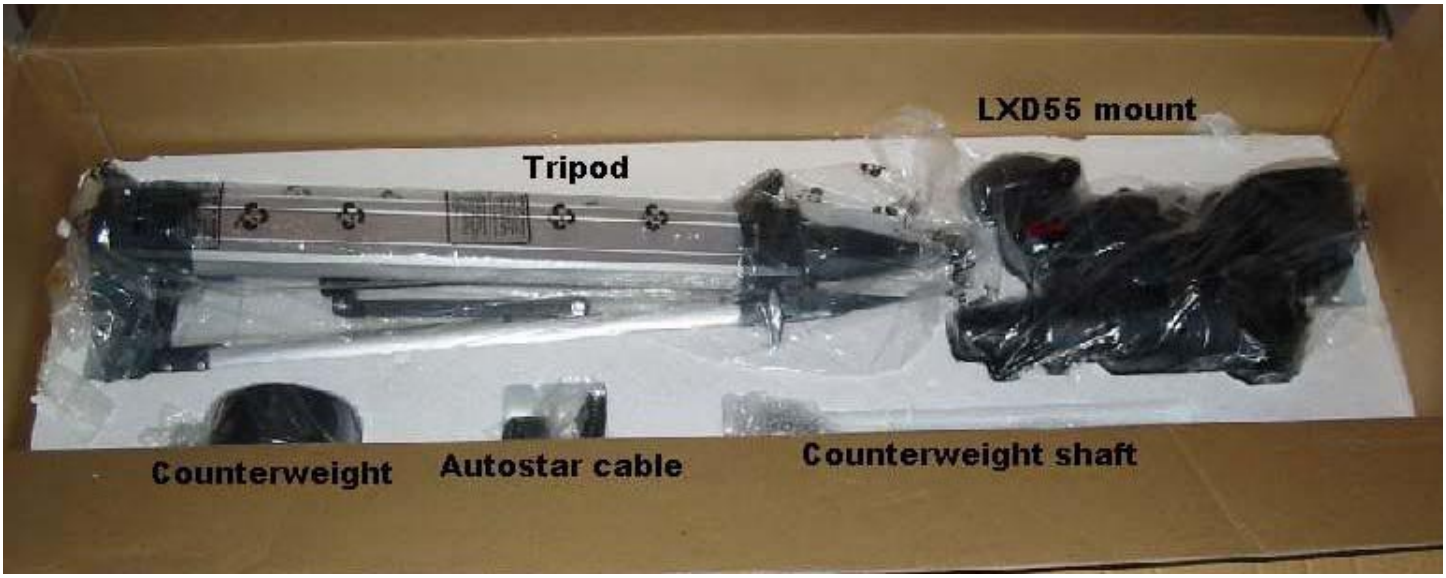
Spreader Tray

Check for presence and condition of tripod spreader tray.

___ ALL OK

-OR-

___ SPREADER TRAY DAMAGED/DEFECTIVE
___ SPREADER TRAY MISSING



The second level in the box should look like this. Check to make sure that all parts are there and OK.

LXD55 GEM Head

Check for presence and condition of the GEM mount.

___ ALL OK

-OR-

___ MISSING SCREWS / BOLTS
___ ALL ASSEMBLIES / COMPONENTS TIGHT
___ CRACKS OR DEFECTS IN CASTINGS

Tripod Assembly

Check for presence and condition of the tripod.

___ ALL OK

-OR-

___ MISSING / STRIPPED SCREWS / BOLTS
___ ALL ASSEMBLIES / COMPONENTS TIGHT
___ CRACKS OR DEFECTS IN CASTINGS
___ TRIPOD MISSING

Counterweight & AutoStar Cable

Check for presence and condition of the counterweight & cable.

___ ALL OK

-OR-

___ COUNTERWEIGHT LOCK BOLT OK
___ AUTOSTAR CABLE ENDS TIGHT
___ CRACKS OR DEFECTS IN CASTINGS
___ WEIGHT MISSING
___ CABLE MISSING

Counterweight Shaft & T-Handle

Check for presence and condition of the counterweight shaft and latitude adjustment T-Handle.

___ ALL OK

-OR-

___ SHAFT RETAINING BOLT MISSING
___ T-HANDLE STRIPPED OR MISSING
___ CRACKS OR DEFECTS IN CASTINGS
___ COUNTERWEIGHT SHAFT MISSING
___ T-HANDLE MISSING

NOTE: The box containing the mount will have one counterweight packed with the mount. Dependng on the scope you have, there will be additional counterweights packed in the box containing the OTA.

Please report any missing or damaged parts to your dealer immediately.

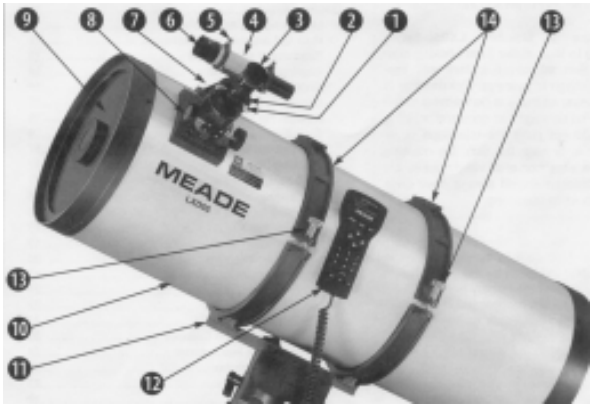
OR

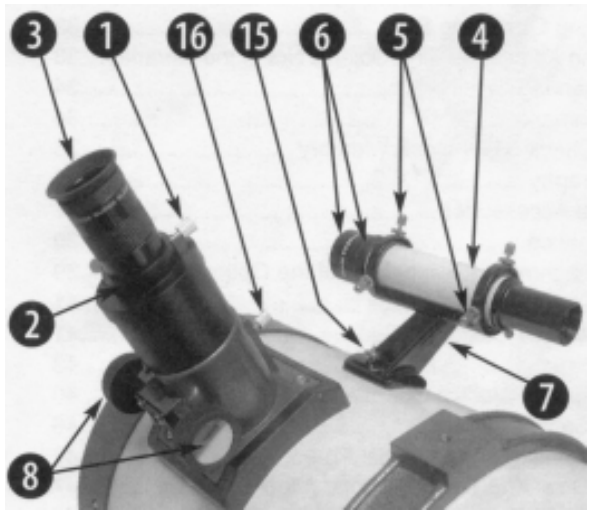
Call Meade Customer Service at:

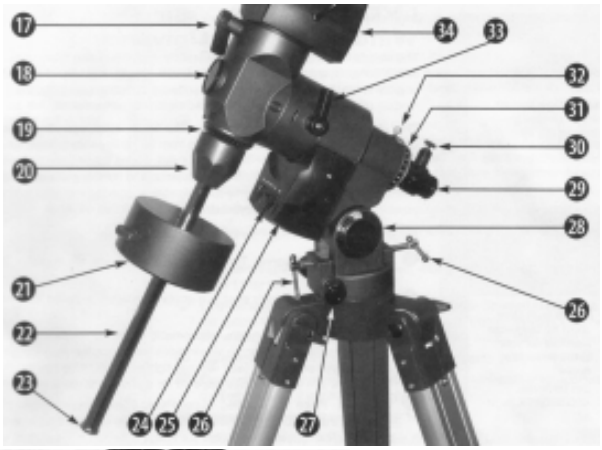
(800) 626-3233

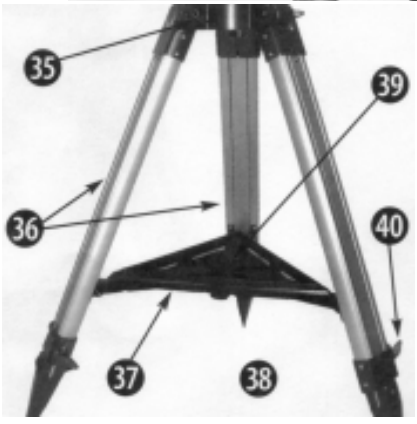
Parts Guide & Checklist

Courtesy of: David (Warp) Sherfy









When you receive your new Meade LXD55 Telescope, it will arrive in two seperate cartons. This list is a comprehensive listing of what you should find in each carton.

Carton 1: Optical Tube Assembly & Accessories

1. **Eyepiece Thumbscrew**
2. **Eyepiece Holder**
3. **Meade 26mm Plossl Eyepiece**
4. **ViewFinder Scope**
5. **ViewFinder Collimation Screws**
6. **ViewFinder Front Cell & Locking Ring**
7. **ViewFinder Bracket**
8. **Focus Knobs**
9. **Corrector Dust Cover**
10. **Optical Tube (OTA)**
15. **ViewFinderr Bracket Screws**
16. **Focus Lock Knob**
21. **Counterweight (depending on scope)**

Carton 2: Mount & Tripod Assembly

11. **Cradle Assembly**
12. **AutoStar Controller**
13. **Cradle Ring Lock Knobs & Washers**
14. **Cradle Rings (Assembly)**
17. **Dec. Lock**
18. **Polar ViewFinder Cap**
19. **Dec. Setting Circle**
20. **Counterweight Shaft Base**
21. **Counterweight (1)**
22. **Counterweight Shaft**
23. **Counterweight Safety Cap**
24. **Computer Control Box**
25. **R.A. Motor Drive Assembly**
26. **Latitude Adjustment Handle (2)**
27. **Fine Azimuth Control Knobs**
28. **Latitude Dial**
29. **Polar Alignment ViewFinder**
30. **Polar Alignment ViewFinder Reticle & LED Knob**
31. **Right Ascension (R.A.) Setting Circle**
32. **R.A. Setting Circle Lock Knob**
33. **R.A. Lock**
34. **Dec. Motor Drive Assembly**
35. **Tripod Leg Adjustment Knobs**
36. **Variable Height Tripod Legs**
37. **Accessory Tray**
38. **Tripod Leg Braces**
39. **Accessory Tray Thumbscrew**
40. **Tripod Leg Lock Knobs**
41. **Battery Pack and Holder**

Who is OPT?

Hello Stargazers! Welcome to Oceanside Photo & Telescope, also known as OPT by our many fellow astronomers (we don't just sell telescopes, we use them). OPT is a real store, populated by real people, who are obsessed with helping you explore every corner of the universe and unlock its mystery. We've been here (in Oceanside, California) since 1947, so we're not going anywhere. You can count on us! Got a question? We've got the answer. Don't know the best telescope for your experience and budget? We'll give you some practical options. Together we can make astronomy fun and enjoy the mystery and wonder of the universe!

Craig Weatherwax
Boss

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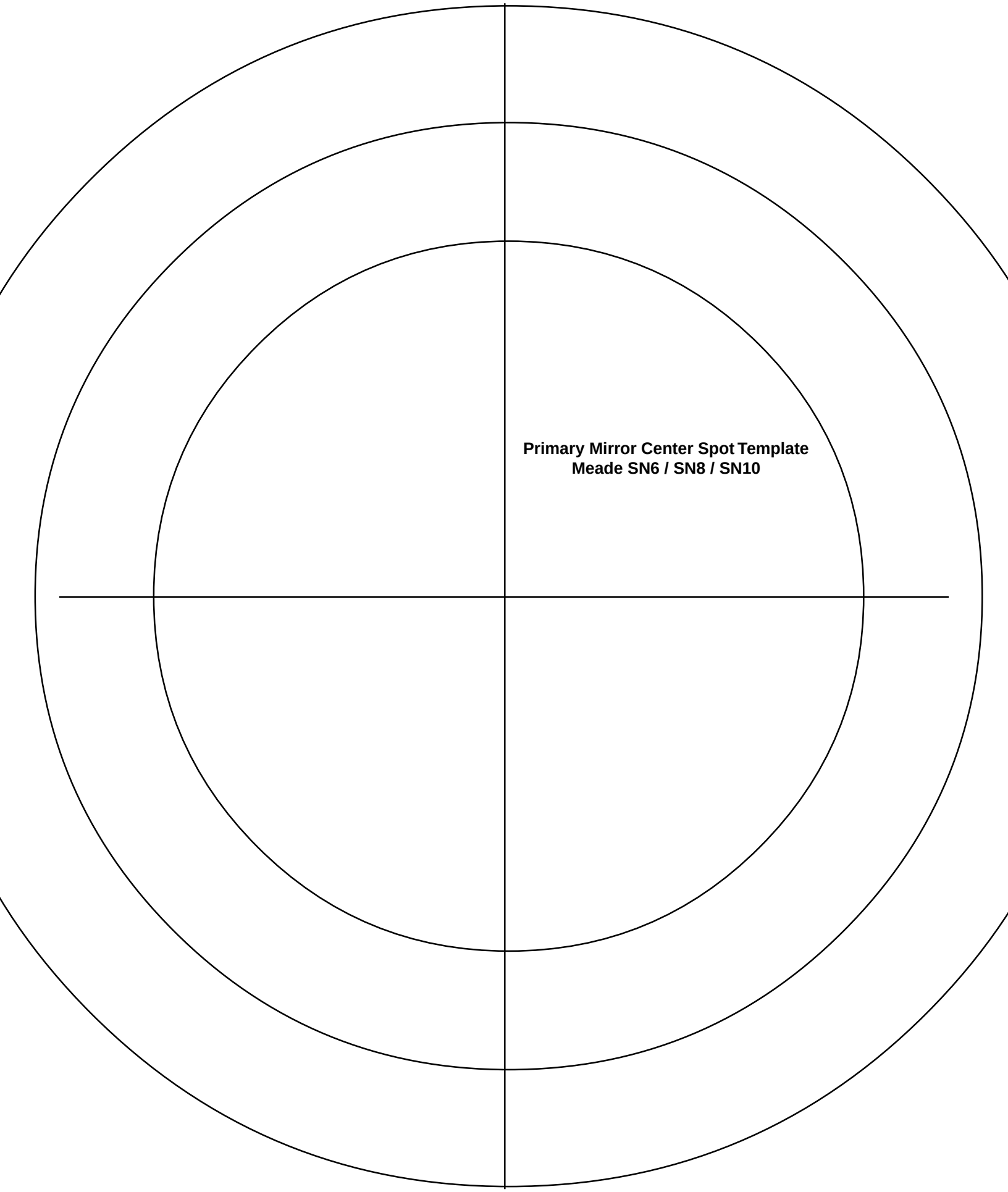
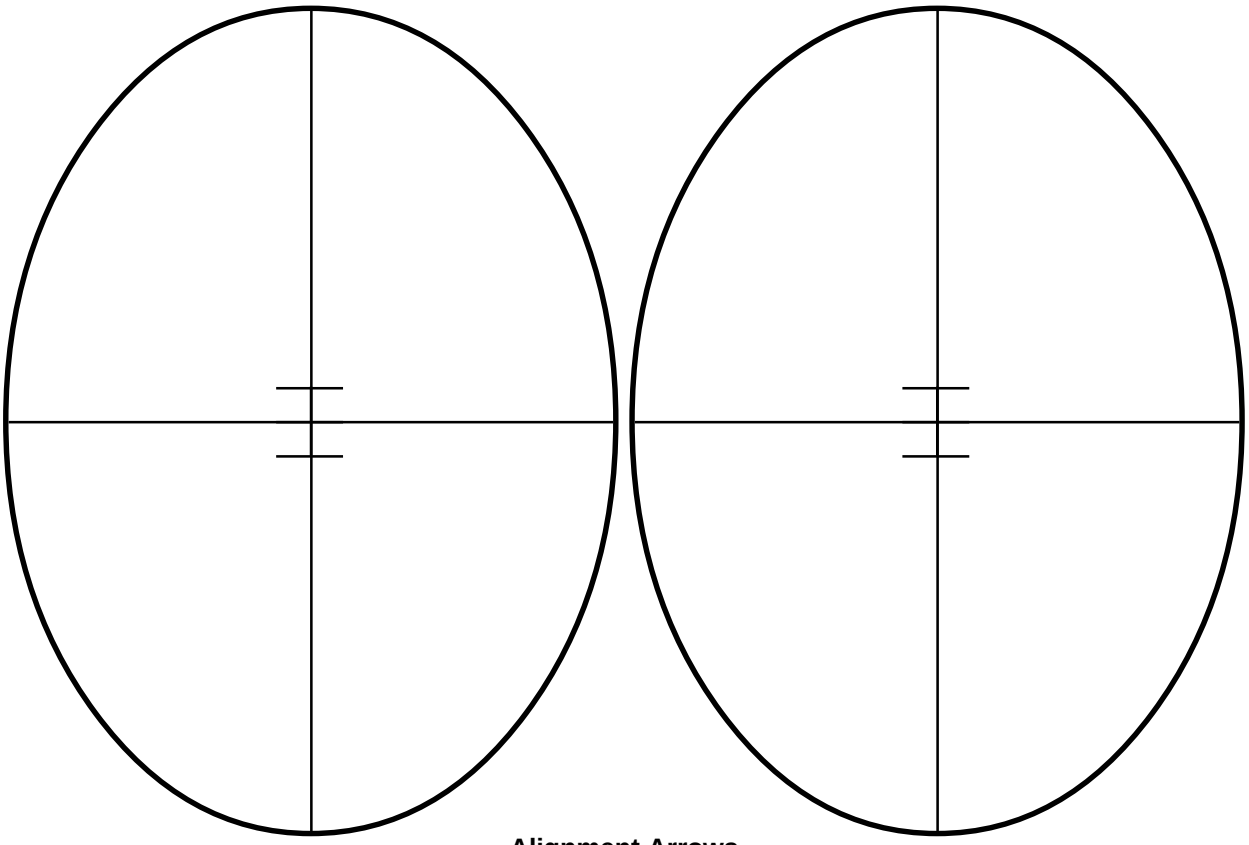
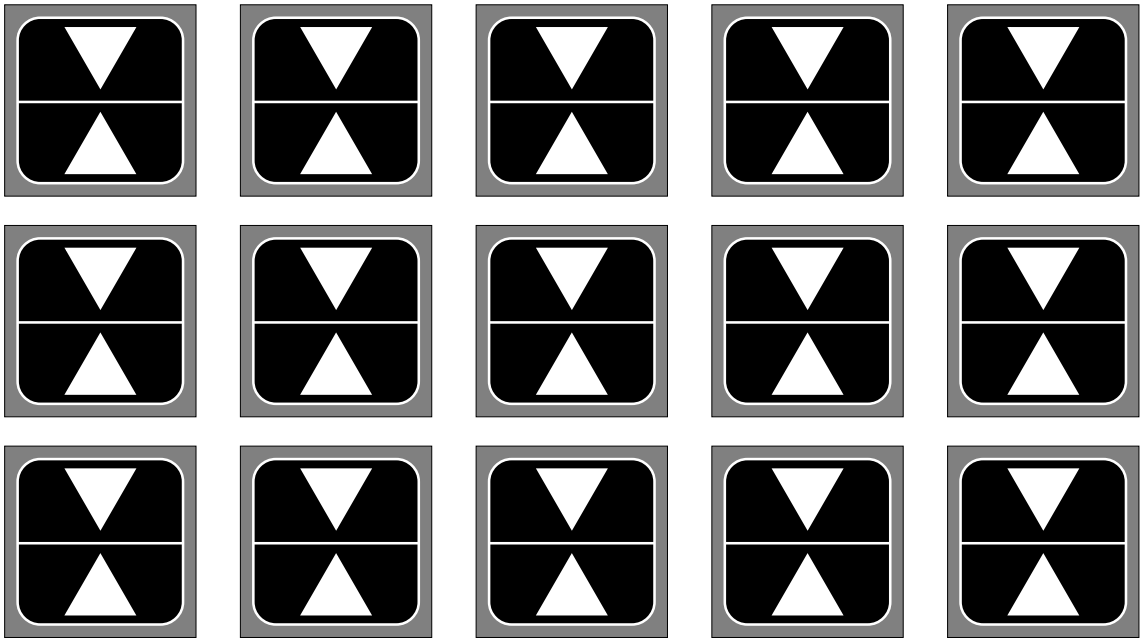

Primary Mirror Center Spot Template
Meade SN6 / SN8 / SN10

Meade SN10 - Secondary Mirror Alignment Template
with 1/8” offsets



Alignment Arrows



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